[N421] Integrated Monitoring of Aircraft Noise at Narita Airport

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ABSTRACT

At Narita Airport, various noise countermeasures such as introduction of low-noise aircraft and soundproofing of houses have been taken by the Narita Airport Authority (NAA), while monitoring of aircraft noise at 71 site locations had been performed independently by the NAA and local prefecture and city governments for purposes of checking of acoustical environment and as a means of noise complaint procedure. Since 1997, the Narita Airport Regional Symbiosis Promotion Foundation (NSF) has come to carry out management and data reduction of all noise monitoring stations under the mutual consent among the NAA and local governments in order to monitor aircraft noise in a united manner via an efficient and highly transparent process. In April 2002, however, the second runway started to use and the NSF became to deal with extensive noise data from more than a hundred monitoring stations. Then, the NSF has installed a new aircraft noise data processing system, which utilizes ATC-Rader Data, information obtained by newly developed aircraft access detection units, etc. This paper gives a brief description of the aircraft noise data processing system as well as an information disclosure system to the public on flight-path and noise observations at Narita.

KEYWORDS: Aircraft, Noise, Radar
1. INTRODUCTION

Narita Airport is one of the world's major air transportation hubs with two runways. The opening of the second runway in 2002 has brought an increase of aircraft movements, irrespective of recent reduced demands on air traffics. Now, sixty seven airlines from 39 countries fly into the airport, which sees some 83,000 passengers and 5,600 tones of cargo per day pass through its facilities. It has, however, also brought a slight increase of noise exposure around the airport as well as an increase of complexity in air traffics because of the limited controlled airspace which is the fate of an inland airport. Monitoring of aircraft noise is performed separately by the Narita Airport Authority (NAA) and local prefecture and city governments, but the management and data reduction of all monitoring stations have come to be carried out in a united manner by the Narita Airport Regional Symbiosis Promotion Foundation (NSF) since 1997 in order to make the process transparent and efficient. In April 2002, when the second runway started to use, more than 30 monitoring stations were newly installed under and near flight paths of the second runway, and the NSF has become to have to deal with extensive noise observations from more than a hundred monitoring stations. To cope with such situations, the NSF has installed a new aircraft noise data processing system (a bbr. as NSF System below), which identifies aircraft noise events by using three different methods of data collation in addition to check by event occurrence time; check of sound arrival direction, check using ATC radar information and check by aircraft-access detecting devices, which identify aircraft flyovers using radio altimeter signal and so on.

2. AIRCRAFT NOISE MONITORING NETWORK AT NARITA

System Configuration

Figure 1 shows system configuration of the aircraft noise monitoring network consisting of both several unattended aircraft noise monitoring systems, which the NAA and local prefecture and city governments individually own, and the NSF System (i.e., NSF's new aircraft noise data processing system). The total of unattended noise monitoring stations included in individual systems is a hundred and one; Thirty three out of the 101 stations are owned by the NAA, twenty three by Chiba Prefecture, ten by Ibaraki Prefectures, twenty two by Narita City and thirteen by other local city governments. Figure 2 shows site locations of these stations. The system configuration, capability and functions for noise monitoring such as sound source identification techniques are different among these systems. On the other, the NSF System is composed of data loggers, an ATC radar data reception unit, data processing and editing terminals, a server delivering information to related authorities and the public.